

WHAT IS CLAIMED IS:

- 1 1. A process, comprising:
2 passing a silica gel body through a hot zone under conditions that cause partial
3 sintering of the gel body; and
4 repassing the gel body through the hot zone under conditions that further sinter
5 the gel body.

- 1 2. The process of claim 1, wherein the passing and repassing comprises:
2 vertically moving the gel body through the hot zone.

- 1 3. The process of claim 1, further comprising:
2 passing the gel body through the hot zone under conditions that significantly
3 purify the gel body without shrinking the gel body.

- 1 4. The process of claim 3, further comprising:
2 treating the silica gel body to cause dehydroxylation prior to performing the
3 passing.

- 1 5. The process of claim 1, wherein the gel body has a tubular shape;
2 the passing causes at least a 1 percent shrinkage in a diameter of the gel body; and
3 the repassing causes at least another 1 percent shrinkage in the diameter of the gel
4 body.

- 1 6. The process of claim 5, wherein one of the passing and the repassing
2 causes at least a 5 percent shrinkage of the diameter of the gel body.

- 1 7. The process of claim 1, further comprising:
2 forming a sol comprising silica particles; and
3 casting the gel body from the sol.

1 8. The process of claim 1, wherein both the passing and repassing include
2 vertically moving the hot zone along the gel body.

1 9. The process of claim 8, wherein the passing and repassing include
2 regulating a temperature of the hot zone to be at least 1300°C.

1 10. The process of claim 8, further comprising:
2 inserting a core-cladding rod into the further sintered gel body; and
3 heat collapsing the further sintered gel body onto the rod to produce a preform.

1 11. The process of claim 9, wherein the passing and repassing produce a
2 preform having a level of [OH] impurities of less than 2 parts per million.

1 12. The process of claim 1, wherein the repassing includes producing a
2 transparent silica-glass overlcladding tube.

1 13. A process, comprising:
2 subjecting one end of a cylindrical silica gel body to a hot zone until the end is at
3 least partially sintered; and
4 vertically passing the gel body through the hot zone to sinter the gel body by
5 causing the partially sintered end to enter the hot zone last.

1 14. The process of claim 13, wherein the partially sintered end has a diameter
2 at least 1 percent smaller than the diameter of the end prior to the subjecting.

1 15. The process of claim 13, further comprising:
2 producing the silica gel body from a sol comprising silica particles; and
3 wherein the gel body has a tubular form.

1 16. The process of claim 14, wherein the passing includes raising the gel body
2 through the hot zone in a direction opposite to the direction of gravity.

1 17. The process of claim 13, wherein the passing produces a silica glass tube.

1 18. A manufacture, comprising:
2 a preform having a central core, a cladding layer, and an overcladding layer; the
3 core, cladding layer, and overcladding layer each comprising silica-glass, the preform
4 having an OD variation of 10^{-1} percent or less at one longitudinal position.

1 19. The manufacture of claim 18, wherein the length and outer diameter of the
2 preform are at least as great as 1200 mm and 90 mm, respectively.

1 20. The manufacture of claim 18, wherein the overcladding layer has less than
2 2 parts per million of hydroxide impurities.

1 21. The manufacture of claim 20, wherein the overcladding layer has less than
2 .2 parts per million of hydroxide impurities.

1 22. The manufacture of claim 19, wherein the preform has an OD variation of
2 5×10^{-2} percent or less at one longitudinal position.

1 23. The manufacture of claim 18, wherein the inner diameter of the
2 overcladding layer varies by less than 1 percent over the length of the preform.